Multiple Auer Rod Like Inclusions in Multiple Myeloma

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Multiple myeloma is characterized by clonal plasma cell proliferation associated with end organ damage. In addition to classical morphological variants, several different types of nuclear and cytoplasmic inclusions have been described. We have come across a case of multiple myeloma with numerous Auer rod like cytoplasmic inclusions, with morphology like faggot bodies.

A 54 year old male presented with back pain since last 6 months with progressive weakness. There was no history of organomegaly, sternal tenderness, lymphadenopathy, gum hypertrophy or bleeding manifestations. The clinical examination revealed only anemia. No other finding was seen on physical examination.

Lab investigations showed hemoglobin of 7.1 g/dL with adequate total leucocyte counts, differential counts and platelet counts. The peripheral smear showed presence of rouleaux formation. A bone marrow aspirate smear revealed 72% atypical plasma cells with immature nuclear chromatin, poorly defined cytoplasmic borders, many binucleate and syncytial forms. In addition, almost all the cells showed numerous intracytoplasmic thin slender Auer rods like structures (Fig. 1). Many cells had bundles of these structures resembling faggot cells (Fig. 2). Cytochemistry

for myeloperoxidase, Sudan black, periodic acid Schiff and nonspecific esterase stain was negative using adequate positive controls. Serum immunofixation electrophoresis showed presence of a monoclonal band along with IgG kappa clonality. Skeletal survey showed multiple lytic lesions in left humerus and left iliac bone. A final diagnosis of multiple myeloma was made.

Auer rod like inclusions have been described previously in multiple myeloma, prolymphocytic leukemia, aplastic anemia, B cell acute lymphoblastic leukemia, chronic lymphocytic leukemia and hypogammaglobulinemia [1]. All cases published till date revealed that this phenomenon is primarily restricted to IgA or IgG and kappa secreting myelomas [2–5]. Our case also showed IgG- κ -type light chain restriction. Auer rod-like inclusions in myeloma are composed of crystallized lysosomal enzyme depositions. However, the exact nature of these inclusions is not known. Morphologically it is difficult to differentiate these structures from Auer rods seen in immature myeloid cells. One of the methods is to perform myeloperoxidase staining which is classically negative in these crystalline structures since true Auer rods shows bright staining [1]. However, positive myeloperoxidase and nonspecific esterase (NSE) have been reported in these Auer rods like structure [2, 5]. Many ultrastructural differences have also been described in literature [5]. In view of these conflicting results it is advised to carefully analyze these inclusions to differentiate it from true Auer rods seen in myeloid progenitors. To conclude Auer rod like inclusions in a case of multiple myeloma is a rare finding and should never be analyzed in isolation. A panel of cytochemical tests, detailed history, examination, laboratory investigations and other biochemical tests are required to avoid misinterpretation and misdiagnosis.

Disclaimers The identity of the patient is not disclosed here in this case.

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Fig. 1 Plasma cells with Auer rods like inclusions in bone marrow aspirate smear in a case of multiple myeloma. (Jenner Giemsa; $\times 1000$ magnification)

Fig. 2 Plasma cells with bundles of Auer rods like inclusions resembling faggot cell. (Stain: Jenner Giemsa; $\times 1000$ magnification)

Compliance with Ethical Standards

Conflict of interest The authors state that there is no conflict of interest present.

Informed Consent Informed consent was taken before bone marrow procedure.

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